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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/677,334	09/28/2000	Eric T. Bax		1659

7590 04/21/2004

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EXAMINER

THOMSON, WILLIAM D

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/677,334

Applicant(s)

BAX, ERIC T.

Examiner

William D. Thomson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/28/00 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-7 have been presented for examination.
2. Claims 1-7 have been rejected.

Priority

3. Applicant has claimed priority to provisional application 60/156,767, filed September 29, 1999. Though, at this time, the Examiner has not been able to check the contents of the provisional application to assure the validity of the claimed priority, the date has been afforded to the Applicant. Further it is presumed that the basis of the provisional is the inventor's article entitled "Validity of Fusion Through Linear Programming", published and made public in July of 1999. If the contents of the provisional are not based on this article the article may become a prior art teaching under 35 U.S.C. §102(b) against the claimed invention. At this time the Examiner is not asserting the rejection.

Information Disclosure Statement

4. Applicant has not provided a formal information disclosure statement (IDS) in the case. Though a prior art search is not required, disclosure of known relevant prior art that may go to the material patentability of the claimed invention is required. For example, it is noted that three separate articles authored by the inventor were not provided and only uncovered during the prior art search by the examiner. Examiner respectfully reminds Applicant of his duty to disclose. Further, a number of articles are referenced in each of these publications, authored or co-authored by the inventor, that

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appear to be material to the patentability of the present claimed invention. Moreover, a number of references have been incorporated into the present application and should be included as well, e.g. Hoeffding reference, Vapnick article(s) and VC related articles or teachings as referenced within the specification. In response to this first Office Action, Applicant should provide a copy of each of these articles as they pertain to the instant invention and properly list them in an IDS form with an appropriate statement. These must be listed with publication dates the formal IDS document, namely a P.T.O 1449. To make the issues clear, this is not a request under 37 C.F.R. 1.105. However, if the Applicant does not comply a requirement to produce the documents under 37 C.F.R. 1.105 will be forthcoming.

Specification

5. The attempt to incorporate subject matter into this application by reference to the VC theory "Statistical Learning Theory", respective reference to "Probability Inequities for Sums of Bounded Random Variables, Hoeffding, and the machine learning database(s) – www.ics.uci.edu/pub/machine-learning-databases , are improper because the VC theory as applied to the instant claimed invention is essential matter, as are the data used to test the hypothesis and the related error bounds to which the hyperlink points. The incorporation of essential material in the specification by reference to a publication is improper.

Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration

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executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. With regard to the hyperlinked data set, as long as a subset of the original data is provided and amended into the present application will meet this requirement. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See M.P.E.P. § 608.01.

The disclosure is objected to because of the following informalities: The references to the federal grants does not need to be included since there appears to be none. The same applies to the section referencing the microfiche appendix. Appropriate correction is required.

Claims are objected to because of the following informalities:

The claims are objected to because the spacing between stanzas in the claims and between claims should be equally spaced, presently multiple spaces are present between stanzas and claims are present. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 C.F.R. 1.52(b). Appropriate correction is required.

Drawings

6. The drawings are objected to under 37 C.F.R. 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “forming an optimized problem in which error bounds for some basis functions and the outputs of the basis function over a set of out-of sample inputs are used to form a set of constraints on the outputs of the target function over the out of sample.... and solving the optimization problem to produce a hypothesis function error bound”, and the application of fusion to the basis function, as well as the optimization must be shown or the feature(s) canceled from the claim(s). the figure that is provided is too high level to show the claimed invention. A more specific and concise figure should be proposed detailing the methodology as recited in the claims, 1-7. At this time only a very general overview has been provided which does not comport with standard practices in the office. The drawings are objected to under 37 C.F.R. 1.83(b) because they are incomplete. 37 C.F.R. 1.83(b) reads as follows:

When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 U.S.C. § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are narrative in form and replete with

indefinite and functional or operational language. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The methodology that is claimed must engage these relations and positively recite their complete functionality and method of implementation for each of the claimed steps so as to provide a clear and concise recitation of the invention sought to be patented. Examples of this are found in the phrases: "forming" an optimization problem and "used to form a set", "for some basis functions" and "subject to the constraints on the target function outputs" in the context of the claims render the claims indefinite. Claims 2-7 inherit this defect.

Claims 1-7 are further rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See M.P.E.P. § 2172.01. The omitted steps are: how one would form a set of constraints or perform forming an optimization problem in which error bounds for some basis functions and the outputs of the basis function are used, or solve the optimization problem to produce a hypothesis function error bound. Further, claims 1-7 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 U.S.C. § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically the means by which one could perform the steps of “forming an optimized problem in which error bounds for some functions”, using the recited methodology to “form a set of constraints on the outputs” which further recited “subject to the constraints on the target function outputs” and lastly providing for “solving the optimization problem” has not been taught. The subject matter relating to these operations may be located in the improperly incorporated subject matter referenced in the objections to the specification. Moreover, the enablement requirement is only satisfied when the specification, when filed, enables one skilled in the particular art to use the invention without undue experimentation. In re Wands. Additionally, to be enabling the specification must teach those skilled in the art “how to make and use the invention as broadly as it is claimed”. In re Vaeck. Moreover, inventions in emerging and unpredictable technologies, or for inventions characterized by factors not reasonably predictable which are known to one of ordinary skill in the art, more evidence is required to show possession. For example, disclosure of only a method of making the invention

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and the function may not be sufficient to support a product claim other than a product-by-process claim. See, e.g., Fiers v. Revel, 984 F.2d at 1169, 25 USPQ2d at 1605; Amgen, 927 F.2d at 1206, 18 USPQ2d at 1021.

Claim Rejections - 35 U.S.C. § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, *and* tangible result to form the basis of statutory subject matter under this section of the law. The Examiner used the following analysis in determining whether or not the claims met the requirements of 35 U.S.C. § 101 specific to concrete, useful, *and* tangible:

“Useful” - The Supreme Court in Diamond v. Diehr requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished. This must be a well established utility. In the context of the present invention, looking to the teachings within the specification and related state of the art, it is believed that the present invention has a well established utility directed to hypothesis checking or testing in machine learning or training systems useful in a number of fields but the claims do not expressly specify how it is applied to any one specific use. Usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the

useful result aspect of the practical application requirement. See *Arrhythmia*, 958 F.2d at 1057, 22 USPQ2d at 1036

"Tangible" - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. §101. A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. In the instant case the claims are directed to an abstract methodology or algorithm for a hypothesis checker or tester not specifically grounded in the technological arts.

"Concrete" - Another consideration is whether the invention produces a "concrete" result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation. In the instant case the problems with improperly incorporated reference along with the lack of detail in the specification and claims, as presented, see rejections under 112 1st section, have resulted in a question as to whether a result can be concrete or guaranteed.

Therefore, based upon the forgoing and following analysis the Examiner must provide this rejection based upon the claimed invention failing on a number of points. The recited invention is not specifically in the technological arts, it provides nothing more than abstract method or algorithm for hypothesis testing and does not produce a concrete result. The claimed invention as a whole must accomplish a practical

application. That is, it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)); Fiers v. Revel, 984 F.2d at 1169, 25 USPQ2d at 1605; Amgen, 927 F.2d at 1206, 18 USPQ2d at 1021.

Moreover, to the issue of the abstraction the claims do not embody a transformation of the information and though claim 2 does recite that it is implemented with a general purpose computer it is still disembodied from functional interactions between substantive real world processes resulting in transformations and useful post process results that are concrete. That is they do not transform physical subject matter to a different state not thing using physical steps as required by a "process". These are theoretical operations on data which are not embodied in any physical structure of physical transformation steps. State Street and A.T&T. Where a claim is broad enough to read on both statutory subject matter (machine implementation or physical transformation of physical subject matter) as well as nonstatutory subject matter (an abstract idea), the claims should be rejected since the claims may be amended, in some cases to overcome the rejections, however the instant claims as presented must be delimited by express terms rather than by claim interpretation or inferences based

upon probable teachings in the specification and associated incorporation of essential matter. In re Lintner.

Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Partition-Based Uniform Error Bounds (BAX 1998), A New Error Bound for the Classifier Chosen by Early Stopping (BAX et al. 1997), Towards More Practical Average Bounds on Supervised Learning (Gu et al. 1996) and Iwamasa (933), individually. Due to the broadness of the claims, rejections under 35 U.S.C. 112 1st, 2nd and 101 with apparent improper incorporation of essential subject matter in the specification each individual teaching, inclusive of the inventor's own work can be reasonably read upon by the claims. Each reference teaches error bounds or bounding for hypothesis checkers with constraints, target functions with solvers. The claims are so indefinite and incomplete, no art rejection would be warranted as substantial guesswork would be involved in determining the scope and content of these claims. See *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962); *Ex parte Brummer*, 12 USPQ 2d, page 1654; and also *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). However, in the interests of compact prosecution, art rejections have been asserted in view of the broadest and

most reasonable interpretation of the claims in view of the specification. The current rejections and objections have been asserted to guide the applicant to amend appropriately and hopefully be able to delineate any patentable subject matter in his *claimed* invention over the prior art. Prior art pertinent to the disclosed invention is also cited and Applicants are reminded that they must consider all cited art under Rule 111(c) when amending the claims to conform with 35 U.S.C. 112.

Conclusion

11. An examination of this application reveals that applicant is unfamiliar with patent prosecution procedure. While an inventor may prosecute the application, lack of skill in this field usually acts as a liability in affording the maximum protection for the invention disclosed. Applicant is advised to secure the services of a registered patent attorney or agent to prosecute the application, since the value of a patent is largely dependent upon skilled preparation and prosecution. The Office cannot aid in selecting an attorney or agent.

Applicant is advised of the availability of the publication "Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office." This publication is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

12. The prior art made of record, see PTO 892, and not relied upon is considered pertinent to Applicant's disclosure, careful consideration must be given prior to

Applicant's response to this Office Action. Applicant is reminded that they must consider all cited art under Rule 111(c) when amending the claims to conform with 35 U.S.C. 112.

13. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this action. Failure to respond within the period for response will result in ABANDONMENT of the application (see 35 U.S.C. 133, M.P.E.P. 710.02, 710.02(b)).


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William D. Thomson whose telephone number is 703-305-0022. The examiner can normally be reached on 8:30-3:30 Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 703-305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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William Thomson
Primary Examiner
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